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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/424,487	02/29/2000	YEN CHOO	PM264975	8044

7590 11/05/2002
Townsend and Townsend
379 Lytton Avenue
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EXAMINER

MAYES, LAURIE A

ART UNIT	PAPER NUMBER
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1653

DATE MAILED: 11/05/2002

27

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/424,487	Applicant(s) CHOO ET AL.	
	Examiner Laurie Mayes	Art Unit 1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 30 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☒ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>21</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in response to Paper #25, received on July 30, 2002. Claim 31 has been cancelled. Claims 25-30 have been withdrawn from further consideration by the Examiner because these claims are drawn to a non-elected inventions. Claims 1-24 and 32 are currently under examination.

The amended claims identifying the sequence numbers are acceptable.

The objection to the abstract is withdrawn.

The rejection of the claims under 35 U.S.C. 101 is withdrawn.

The documents submitted for Serial No. 09/424,488 cannot be located. The examiner requests that the applicant resubmit any documents listed in the information disclosure statement for the instant case that the applicant wishes to be reviewed by the examiner. The examiner apologizes for any inconvenience this may cause.

Restriction

It is noted that applicant's response (paragraph bridging pages 8-9) assert unity of invention special technical feature is present and therefore Groups I and II should be kept together. The comment is unpersuasive in view of the art cited in the present action. Choo et al., cited infra which demonstrates the special technical feature of the polynucleotide, was known in the art. The applicant argues that the hybridization assay in which Group II nucleic acids can be used is merely a "throw-away utility" and therefore Group III and Groups I and II should not be restricted. However, the use of nucleic acids in an assay is not a "throw-away utility" such as use in a shampoo; rather it serves an important role in chemical experiments in laboratories and

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is often necessary for the development of new compounds and procedures. Thus, the restriction is proper.

Obvious Type Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-24 and 32 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 and 30 of copending Application No. 09/424488. Although the conflicting claims are not identical, they are not patentably distinct absent factual evidence to the contrary from each other as indicated below.

Claim 1 of each application is directed to a nucleic acid binding protein of Cys2-His2 class. Claim 1 in each application makes modifications at a quadruplet in the sequence at base 4 in quadruplet A. In the current application, the modification is Glu, Asn or Val whereas in the copending application the modification is Gln. Note that Glu and Gln differ only by the penultimate R group terminal moiety. The modification to quadruplet C in the current application claim 1 is Ser, Thr, Val, Ala, Glu, Asn whereas the copending application claim 1 indicates this is any amino acid residue and therefore, includes all of the ones listed for the current application. The design steps of claim 1 in the current and copending application are the

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same. In claim 2, the copending and the current application claims contain overlapping substitutions for steps C and D.

The first seven (7) lines of claim 3 of each application contain identical recitation. Items a) through p) of claim 3 in each application are substantively identical with overlapping recitation of the substituted amino acids. Claims 4-16, 18-19, 21-23 and claim 32 (current application) and claim 30 (copending application) in each application are word for word identical. Insofar as claim 17 in the current application depends from claim 3 and the copending application claim depends from claim 13, both the current application and copending application claim 17 depend from claim 3 and contain indistinctly claimed subject matter. Claim 20 in the current application depends from claim 3 whereas claim 20 in the copending application depends from claim 19 which depends from claim 13 which depends from any one of claims 1-3. Thus, each claim 20 contains patentably indistinct subject matter as does claim 23 in the current application and copending application but for the claim dependency of claim 20 and 22 respectively. The current application claim 24 is also indistinguishable from claim 23 in the current application and the copending application as each claim 23 indicates modification at positions +1, +5, +8, -1, +2, +3 or 6 whereas claim 24 in the current application is a subset which is indistinguishable. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

In view of the amendments to the claims, the previously imposed provisional statutory double patenting rejection is removed in favor of the above stated rejection. The comments in applicant's response (page 10, paragraph 8) have been considered but are unpersuasive as to the current ground of rejection.

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New Rejections

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1(b) and 3(g) are indefinite because it states that if base 4 is C, then position +6 is any residue as long as position ++2 is not Asp. What is +6 if the ++2 position IS Asp?

Claim 2 does not have antecedent basis in claim 1 as claim 1 does not reference base 4 to be anything other than A or C.

Claim 3(g) is indefinite because it is unclear what a "small residue" is.

Claim 3(l) is indefinite because "asp" should be --"ASP"--.

Claim 3(o) appears to be a typographical error; the specification teaches in Figure 6 that position +2 is Asp when base 1 is C. For examination purposes, claim 2(o) has been read "is Asp".

Claim 4 is indefinite because of the language "any preceding claim". An amendment that reads, for example, "any one of claims 1-3" would overcome this rejection.

Claim 14 is indefinite because it recites a sequence that is interrupted by a ";" which renders the sequence indefinite.

Claim 1-12 and 18 are indefinite because they depend from the above claims and do not clarify the ambiguities.

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Claim 15 should have the “[Elrod-Ericson et al., (1996) Structure 4:1171-1180)] removed from the claim.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 9-11, 13, 15-23 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Choo et al. (WO 96/06166) Choo teaches rules for selecting amino acids within α -helices of zinc fingers based on the nucleic acid sequence bound by the zinc finger. Choo represents their nucleotide sequences in the traditional 5' to 3' direction using triplet nucleic acid codons. The instant invention represents the nucleotide sequence in complementary and 3' to 5' direction using the numbering of the originating 5' to 3' strand. Further, the instant application uses a quadruplet nucleic acid code, in which the 4th nucleotide of the quadruplet is the 1st nucleotide of the next quadruplet. Because of the difference in direction presentation, the Examiner will schematically depict Choo et al. nucleic acid sequence in the 5' to 3' direction and compare this same sequence to that disclosed so that the methods can be clearly discussed by reference to this figure. Note that Choo et al. refers to the first position of the triplet as the 5' position, the third as the 3' position, and second as the middle position in Table 2.

Choo et al: 1 2 3 1 2 3 1 2 3 1 2 3 -3' nt position

G G G A A A T T T C C C C

Due to the fact that one strand is 5' to 3' to the second strand which is 3' to 5', it is easy to flip the sequence of Choo et al. around and renumber as set forth in the instant invention (3' Nos). The flipped 5' Nos are also shown, for “book keeping” purposes. Because the reader gets

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to choose the quadruplet, the Examiner has numbered the claims using her own discretion and **the Examiner's numbering will be the reference numbering for this rejection.**

Ex. Nos ->	2	3	4/1	2	3	4/1	2	3	4/1	2	3	4/1
5' Nos <-	3	2	1	3	2	1	3	2	1	3	2	1
3' Nos ->	1	2	3	4/1	2	3	4/1	2	3	4/1	2	3
Nt Base :	C	C	C	T	T	T	A	A	A	G	G	G

Instant claim 1iib states that if base 4 is C, then position +6 in the a-helix is Ser, Thr, Val, Ala, Glu or Asn. At page 25, Choo teaches that cytosine cannot reliably discriminate by a hydrogen bonding amino acid side chain in the major groove; therefore, +6 in the a-helix can be any residue.

Instant claim 2c states that if nucleotide base 4 is G (position 1 of the 5' triplet), then position +6 in the a-helix is Arg or Lys. Table 2 on page 34 of Choo teaches that when G is at position 5' of the triplet, then position +6 in the a-helix is Arg.

Instant claim 2d states that if nucleotide base 4 is T, then position +6 in the a-helix is Ser, Thr, Val or Lys. Table 2 on page 34 of Choo teaches that when T is at position 5' of the triplet, then position +6 in the a-helix is Ser or Thr.

Instant claim 3a states that if nucleotide base 4 is G, then position +6 in the a-helix is Arg or Lys. Table 2 on page 34 of Choo teaches that when G is at position 5' of the triplet, then position +6 in the a-helix is Arg.

Instant claim 3b states that if nucleotide base 4 is A, then position +6 in the a-helix is Glu, Asn or Val. At page 25, para. 1, Choo states that "adenine is also an important determinant of sequence specificity, recognized almost exclusively by Asn or Gln . . . (when) A at the 5' end . . . the majority of which were of one clone with Asn at +6."

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Instant claim 3c states that if nucleotide base 4 is T, then position +6 in the a-helix is Ser, Thr, Val or Lys. Table 2 on page 34 of Choo teaches that when T is at position 5' of the triplet, then position +6 in the a-helix is Ser or Thr.

Instant claim 3d states that if base 4 is C, then position +6 in the a-helix is Ser, Thr, Val, Ala, Glu or Asn. On page 25, para. 2, Choo teaches that +6 in the a-helix can be any residue because cytosine cannot reliably discriminate by a hydrogen bonding amino acid side chain in the major groove.

Instant claim 3e states that if nucleotide base 3 is G (position 2 of the 5' triplet), then position +3 in the a-helix is His. Choo teaches on Table 2 on page 34 that when G is placed in the middle or second position of the triplet, the +3 in the a-helix is His.

Instant claim 3f states that if base 3 is A, then position +3 of the a-helix is Asn. Choo teaches in Table 2 that when A is placed in the middle of the triplet, the +3 of the a-helix is Asn.

Instant claim 3g states that if base 3 is T, then position +3 of the a-helix is Ala, Ser or Val. Choo teaches in Table 2 that when T is placed in the middle of the triplet, the +3 in the a-helix is Ala, Ser or Val.

Instant claim 3h states that if base 3 is C, then position +3 of the a-helix is Ser, Asp, Glu, Leu, Thr or Val. Choo teaches in Table 2 that when C is placed in the middle of the triplet, the +3 in the a-helix is Asp, Leu, Thr or Val.

Instant claim 3i states that if base 2 is G (position 3 or the 5' triplet), then position -1 of the a-helix is Arg. Choo teaches in Table 2 that when T is placed at the 3' end or third position of the triplet, -1 of the a-helix is Arg.

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Instant claim 3j states that if base 2 is A, then position -1 of the α -helix is Gln. Choo teaches in Table 2 that when A is placed at the 3' end of the triplet, -1 of the α -helix is Gln.

Instant claim 3l states that if base 2 is C, then position -1 of the α -helix is Asp or His. Choo teaches in Table 2 that when C is placed at the 3' end of the triplet, -1 of the α -helix is Asp.

Instant claim 3p states that if base 1 is T, then position +2 of the α -helix is Ser or Thr. Choo teaches in Table 2 that when T is placed at the 3' end of the triplet, +2 of the α -helix is Ser.

Regarding claim 4, Choo teaches a zinc finger in which +4 is Leu and +7 is His- see Figure 2 wherein the sequence is as follows:

X ^a	C	X	X	X	C	X	X	X	F	X ^c	R	S	D	E	L	T	R	H	T	R	X ^b	H	T
											-1	1	2	3	4	5	6	7	8	9			

Regarding claim 5, Fig. 2 of Choo teaches X^a as Phe or Tyr-X or ProPhe/Tyr-X.

Regarding claim 6, Fig. 2 of Choo teaches X₂₋₄ as Arg-Ile.

Regarding claim 7, Fig. 2 of Choo teaches X^b is Thr or Ile.

Regarding claim 9, Fig. 7 teaches that the linker is Thr-Gly-Glu-Lys or Thr-Gly-Glu-Lys-Pro.

Regarding claim 10, Fig. 2 of Choo teaches that position +9 is Arg or Lys.

Regarding claim 11, sequence 1B of Fig. 7 shows that positions +1, +5, and +8 are not Phe, Trp or Tyr.

Regarding claim 12, Fig. 7 shows that positions +1, +5, and +8 are not respectively occupied by the residues Lys, Thr and Gln

Regarding claim 13, Choo in Table 1 teaches mutating zinc fingers.

Regarding claims 15 and 16, Choo teaches (p. 6, para. 1) that the use of Zif268 as the model zinc finger.

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Regarding claim 17, Fig. 13 of Choo teaches two or more zinc finger motifs placed N to C terminal.

Regarding claim 18, Fig. 15 of Choo teaches the N-terminal zinc finger is preceded by MAEEKP.

In Example 1, Choo teaches the use of the phage display technique to build and screen a random zinc finger binding motif library. Thus, the methods of claims 19-21 are taught.

In Example 1, Choo teaches that the fusions to the minor coat protein (pIII) of bacteriophage fd and the subsequent steps of the phage display assay. Thus claim 22 is taught. Also, Choo teaches that positions -1, +3, +6 and +2 were randomized (p. 26, bottom and Fig. 2 as discussed in Example 1). Thus, claim 23 is anticipated.

Claim 32 is anticipated because while overlapping quadruplets are not expressly selected, the resulting triplets become the same because the numbering of base 4 and 1 are the same.

Applicant argues that applying the triplet rules of Choo and the quadruplet rules lead to different results. However, the examiner argues that if base 4 of the quadruplet is redefined as base 1 of the next triplet, then the results are the same. The examples provided by the applicant place a T in the position of base 4 and a G in position 1. Thus, when the triplet rules and the quadruplet rules are applied, the rules are essentially applied to different bases. However, if the triplet rules are applied to the example as if base 4 were renumbered to base 1 and thus represented by a T, the results are the same. Therefore, the applicant's arguments are found to be unpersuasive.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 9-11, 13-23 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choo et al. (WO 96/06166) in further view of Krizek et al. (J. Am. Chem. Soc.; 1991; 113 (12); 4518-4523).

Choo teaches rules for selecting amino acids within α -helices of zinc fingers based on the nucleic acid sequence bound by the zinc finger. Choo represents their nucleotide sequences in the traditional 5' to 3' direction using triplet nucleic acid codons. The instant invention represents the nucleotide sequence in complementary and 3' to 5' direction using the numbering of the originating 5' to 3' strand. Further, the instant application uses a quadruplet nucleic acid code, in which the 4th nucleotide of the quadruplet is the 1st nucleotide of the next quadruplet. Because of the difference in direction presentation, the Examiner will schematically depict Choo et al. nucleic acid sequence in the 5' to 3' direction and compare this same sequence to that disclosed so that the methods can be clearly discussed by reference to this figure. Note that Choo et al. refers to the first position of the triplet as the 5' position, the third as the 3' position, and second as the middle position in Table 2.

Choo et al: 1 2 3 1 2 3 1 2 3 1 2 3 -3' nt position

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Nos). The flipped 5' Nos are also shown, for "book keeping" purposes. Because the reader gets to choose the quadruplet, the Examiner has numbered the claims using her own discretion and **the Examiner's numbering will be the reference numbering for this rejection.**

Ex. Nos ->	2	3	4/1	2	3	4/1	2	3	4/1	2	3	4/1
5' Nos <-	3	2	1	3	2	1	3	2	1	3	2	1
3' Nos ->	1	2	3	4/1	2	3	4/1	2	3	4/1	2	3
Nt Base :	C	C	C	T	T	T	A	A	A	G	G	G

Instant claim 1iib states that if base 4 is C, then position +6 in the a-helix is Ser, Thr, Val, Ala, Glu or Asn. At page 25, Choo teaches that cytosine cannot reliably discriminate by a hydrogen bonding amino acid side chain in the major groove; therefore, +6 in the a-helix can be any residue.

Instant claim 2c states that if nucleotide base 4 is G (position 1 of the 5' triplet), then position +6 in the a-helix is Arg or Lys. Table 2 on page 34 of Choo teaches that when G is at position 5' of the triplet, then position +6 in the a-helix is Arg.

Instant claim 2d states that if nucleotide base 4 is T, then position +6 in the a-helix is Ser, Thr, Val or Lys. Table 2 on page 34 of Choo teaches that when T is at position 5' of the triplet, then position +6 in the a-helix is Ser or Thr.

Instant claim 3a states that if nucleotide base 4 is G, then position +6 in the a-helix is Arg or Lys. Table 2 on page 34 of Choo teaches that when G is at position 5' of the triplet, then position +6 in the a-helix is Arg.

Instant claim 3b states that if nucleotide base 4 is A, then position +6 in the a-helix is Glu, Asn or Val. At page 25, para. 1, Choo states that "adenine is also an important determinant of sequence specificity, recognized almost exclusively by Asn or Gln . . . (when) A at the 5' end . . . the majority of which were of one clone with Asn at +6."

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Instant claim 3d states that if base 4 is C, then position +6 in the a-helix is Ser, Thr, Val, Ala, Glu or Asn. On page 25, para. 2, Choo teaches that +6 in the a-helix can be any residue because cytosine cannot reliably discriminate by a hydrogen bonding amino acid side chain in the major groove.

Instant claim 3e states that if nucleotide base 3 is G (position 2 of the 5' triplet), then position +3 in the a-helix is His. Choo teaches on Table 2 on page 34 that when G is placed in the middle or second position of the triplet, the +3 in the a-helix is His.

Instant claim 3f states that if base 3 is A, then position +3 of the a-helix is Asn. Choo teaches in Table 2 that when A is placed in the middle of the triplet, the +3 of the a-helix is Asn.

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Instant claim 3h states that if base 3 is C, then position +3 of the a-helix is Ser, Asp, Glu, Leu, Thr or Val. Choo teaches in Table 2 that when C is placed in the middle of the triplet, the +3 in the a-helix is Asp, Leu, Thr or Val.

Instant claim 3i states that if base 2 is G (position 3 or the 5' triplet), then position -1 of the a-helix is Arg. Choo teaches in Table 2 that when T is placed at the 3' end or third position of the triplet, -1 of the a-helix is Arg.

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Instant claim 3j states that if base 2 is A, then position -1 of the α -helix is Gln. Choo teaches in Table 2 that when A is placed at the 3' end of the triplet, -1 of the α -helix is Gln.

Instant claim 3l states that if base 2 is C, then position -1 of the α -helix is Asp or His. Choo teaches in Table 2 that when C is placed at the 3' end of the triplet, -1 of the α -helix is Asp.

Instant claim 3p states that if base 1 is T, then position +2 of the α -helix is Ser or Thr. Choo teaches in Table 2 that when T is placed at the 3' end of the triplet, +2 of the α -helix is Ser.

Regarding claim 4, Choo teaches a zinc finger in which +4 is Leu and +7 is His- see Figure 2 wherein the sequence is as follows:

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Regarding claim 6, Fig. 2 of Choo teaches X₂₋₄ as Arg-Ile.

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Regarding claim 9, Fig. 7 teaches that the linker is Thr-Gly-Glu-Lys or Thr-Gly-Glu-Lys-Pro.

Regarding claim 10, Fig. 2 of Choo teaches that position +9 is Arg or Lys.

Regarding claim 11, sequence 1B of Fig. 7 shows that positions +1, +5, and +8 are not Phe, Trp or Tyr.

Regarding claim 12, Fig. 7 shows that positions +1, +5, and +8 are not respectively occupied by the residues Lys, Thr and Gln

Regarding claim 13, Choo in Table 1 teaches mutating zinc fingers.

Regarding claims 15 and 16, Choo teaches (p. 6, para. 1) that the use of Zif268 as the model zinc finger.

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Regarding claim 17, Fig. 13 of Choo teaches two or more zinc finger motifs placed N to C terminal.

Regarding claim 18, Fig. 15 of Choo teaches the N-terminal zinc finger is preceded by MAEEKP.

In Example 1, Choo teaches the use of the phage display technique to build and screen a random zinc finger binding motif library. Thus, the methods of claims 19-21 are taught.

In Example 1, Choo teaches that the fusions to the minor coat protein (pIII) of bacteriophage fd and the subsequent steps of the phage display assay. Thus claim 22 is taught. Also, Choo teaches that positions -1, +3, +6 and +2 were randomized (p. 26, bottom and Fig. 2 as discussed in Example 1). Thus, claim 23 is anticipated.

Claim 32 is anticipated because while overlapping quadruplets are not expressly selected, the resulting triplets become the same because the numbering of base 4 and 1 are the same.

Applicant argues that applying the triplet rules of Choo and the quadruplet rules lead to different results. However, the examiner argues that if base 4 of the quadruplet is redefined as base 1 of the next triplet, then the results are the same. The examples provided by the applicant place a T in the position of base 4 and a G in position 1. Thus, when the triplet rules and the quadruplet rules are applied, the rules are essentially applied to different bases. However, if the triplet rules are applied to the example as if base 4 were renumbered to base 1 and thus represented by a T, the results are the same. Therefore, the applicant's arguments are found to be unpersuasive.

Krizek teaches the peptide sequence described in SEQ ID NO:6 in the instant application. The peptide is described as a zinc finger peptide designed from a database of consensus

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sequences having the common formula of (Tyr, Phe)-X-Cys-X_{2,4}-Cys-X₃-Ohe-X₅-Leu-X₂-his-X_{3,4}. Krizak does not teach the set of rules of the method described in the instant application.

Choo teaches the set of rules of the method described in the instant application. See above for the teachings of Choo.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the sequence taught by Krizek as a model for zinc finger consensus structure and to have used the design logic to construct zinc finger consensus proteins. The person of ordinary skill in the art would have been motivated to use the above sequence as a model consensus peptide because the peptide is taught as such by Krizak. Thus, the claimed invention was within the ordinary skill in the art to make and use at the time of invention and was obvious.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laurie Mayes whose telephone number is (703) 605-1208. The examiner can normally be reached on Monday through Friday from 7 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low can be reached on (703) 305-2923. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3014 for regular communications and (703) 305-3014 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1123.

L. Mayes

Laurie Mayes
Patent Examiner
Art Unit 1653
November 4, 2002

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